

IN THE CLAIMS

This listing of claims replaces all prior versions and listings of the claims in the above-referenced application.

1. (Previously Presented) A light-emitting device, comprising:

a semiconductor structure having a plurality of semiconductor layers and including an active region within said layers;

first and second conductive metal electrodes contacting respectively different semiconductor layers of said structure, the first and second conductive metal electrodes being disposed on a same side of the structure; and

a migration barrier for preventing migration of metal from at least one of said electrodes onto the surface of the semiconductor layer with which said at least one electrode is in contact;

wherein said migration barrier comprises at least one of Ti and W.

2. (Original) The device as defined by claim 1, wherein said at least one electrode comprises a silver-containing electrode.

3. (Original) The device as defined by claim 1, wherein said device further includes means for applying electrical signals across said first and second electrodes, and wherein said migration barrier is operative to prevent electrochemical migration of metal from said at least one electrode on said surface of the semiconductor layer with which said electrode is in contact.

4. (Previously Presented) The device as defined by claim 13, wherein said device further includes means for applying electrical signals across said first and second electrodes, and wherein said migration barrier is operative to prevent electrochemical migration of metal from said at least one electrode on said surface of the semiconductor layer with which said electrode is in contact.

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5. (Original) The device as defined by claim 1, wherein said plurality of semiconductor layers includes an n-type layer of a III-V nitride semiconductor and a p-type layer of a III-V nitride semiconductor, and wherein said at least one electrode is deposited on said p-type layer.

6. (Original) The device as defined by claim 4, wherein said plurality of semiconductor layers includes an n-type layer of a III-V nitride semiconductor and a p-type layer of a III-V nitride semiconductor, and wherein said at least one electrode is deposited on said p-type layer.

7. (Original) The device as defined by claim 5, wherein said device includes an active light-emitting region at the pn junction between said p-type layer and said n-type layer.

8. (Original) The device as defined by claim 6, wherein said device includes an active light-emitting region at the pn junction between said p-type layer and said n-type layer.

9. (Original) The device as defined by claim 1, wherein said migration barrier comprises a guard ring around the periphery of said at least one electrode.

10. (Original) The device as defined by claim 4, wherein said migration barrier comprises a guard ring around the periphery of said at least one electrode.

11. (Previously Presented) The device as defined by claim 9, wherein said guard ring contacts said at least one electrode.

12. (Canceled).

13. (Previously Presented) A light-emitting device, comprising:
a semiconductor structure having a plurality of semiconductor layers and including an active region within said layers;

first and second conductive metal electrodes contacting respectively different

semiconductor layers of said structure; and

a migration barrier for preventing migration of metal from at least one of said electrodes onto the surface of the semiconductor layer with which said at least one electrode is in contact;

wherein said migration barrier comprises a guard ring spaced from said at least one electrode.

14. (Canceled).

15. (Original) The device as defined by claim 13, wherein said guard ring is held at a positive potential with respect to the potential of said at least one electrode.

16. (Canceled).

17. (Original) The device as defined by claim 11, wherein said guard ring covers a portion of said surface of the semiconductor layer with which said at least one electrode is in contact.

18. (Original) The device as defined by claim 13, wherein said guard ring covers a portion of said surface of the semiconductor layer with which said at least one electrode is in contact.

19. (Original) The device as defined by claim 11, wherein said guard ring has a substantially step-shaped cross-section, and also covers the edge of said at least one electrode.

20. (Canceled).

21. (Original) The device as defined by claim 1, wherein said migration barrier comprises a guard sheet that covers the surface of said at least one electrode.

22. (Canceled).

23. (Previously Presented) The device as defined by claim 13, wherein said guard ring comprises a conductive material.

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24. (Previously Presented) The device as defined by claim 21, wherein said guard sheet comprises a conductive material.

25. (Original) The device as defined by claim 23, wherein said conductive material is a conductive metal.

26. (Canceled).

27. (Original) The device as defined by claim 25, wherein said conductive metal comprises a metal containing at least one of Ni, Ti, W, Al, Cr, Cu, Au, Sn, Rh, Re, Ru.

28. (Currently Amended) A light-emitting device, comprising:
a semiconductor structure having a plurality of semiconductor layers and including an active region within said layers;

first and second conductive metal electrodes contacting respectively different semiconductor layers of said structure; and

a migration barrier for preventing migration of metal from at least one of said electrodes onto the surface of the semiconductor layer with which said at least one electrode is in contact;

wherein said migration barrier comprises at least one of Al, Cr, Cu, Au, Sn, Rh, Re, Ru.

29. (Previously Presented) A light-emitting device, comprising:
a semiconductor structure having a plurality of semiconductor layers and including an active region within said layers;

first and second conductive metal electrodes contacting respectively different semiconductor layers of said structure; and

a migration barrier for preventing migration of metal from at least one of said electrodes onto the surface of the semiconductor layer with which said at least one electrode is in contact;

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wherein said migration barrier includes an edge protector portion comprising a dielectric material which covers an edge of said at least one electrode, and a conductive guard sheet that covers said edge protector portion and at least a portion of said at least one electrode.

30-31. (Canceled).

32. (Currently Amended) A light emitting device, comprising:

a semiconductor structure that includes a light-emitting active region between an n-type layer of III-V nitride semiconductor and a p-type layer of III-V nitride semiconductor;
a p-electrode comprising silver-containing metal deposited on said p-type layer;
an n-electrode coupled with said n-type layer;
means by which electrical signals can be applied across said electrodes to cause light emission from the active region; and

a migration barrier for preventing electrochemical migration of silver ions from said p-electrode toward the active region, the migration barrier comprising at least one of Ti, W, Al, Cr, Cu, Au, Sn, Rh, Re, Ru;

wherein the p- and n-electrodes are disposed on a same side of the structure.

33. (Original) The device as defined by claim 32, wherein said migration barrier comprises a guard ring around the periphery of said p-electrode.

34. (Original) The device as defined by claim 33, wherein said guard ring covers a portion of the p-type layer.

35. (Original) The device as defined by claim 33, wherein said guard ring contacts said p-electrode.

36. (Original) The device as defined by claim 33, wherein said guard ring is spaced from said p-electrode.

37. (Original) The device as defined by claim 36, wherein said guard ring is held

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at a positive potential with respect to the potential of said p-electrode.

38. (Original) The device as defined by claim 35, wherein said guard ring has a substantially step-shaped cross-section, and also covers the edge of said p-electrode.

39. (Original) The device as defined by claim 32, wherein said migration barrier comprises a guard sheet that covers the surface of said p-electrode.

40. (Original) The device as defined by claim 33, wherein said guard ring comprises a conductive material.

41. (Original) The device as defined by claim 39, wherein said guard sheet comprises a conductive material.

42. (Original) The device as defined by claim 40, wherein said conductive material is a conductive metal.

43. (Original) The device as defined by claim 41, wherein said conductive material is a conductive metal.

44-50. (Canceled).

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